

CLAIMS

1. An antenna for receiving wireless communication signal, said antenna comprising:

5 a plurality of antenna elements positioned at smaller distance apart than a half wavelength of a frequency of signal to be received;

a plurality of transmission lines for transmitting the signal received in any of the antenna elements, at least any one of the transmission lines having a delay circuit with a predetermined electric length;

10 synthesizing means for synthesizing the received signals that have been transmitted through the plurality of transmission lines; and

switching means, which is positioned in the transmission line, for switching the antenna elements or the transmission lines, in which
15 the switching means switches the antenna elements or the transmission lines to set to two a number of antenna elements to be simultaneously output among the plurality of antenna elements and to change a directivity of the antenna to the reverse direction thereof.

20 2. The antenna according to claim 1, wherein the delay circuit is set so that a sum of phase difference corresponding to a distance between the two antenna elements outputting simultaneously and phase difference of electric length of the transmission lines connected to the two antenna elements can become 180 degrees at the frequency.

25 3. The antenna according to claim 1, wherein a distance between the antenna elements and the delay circuit are adjusted, so that the antenna can have null point in the directivity thereof in at least one direction.

4. A signal-receiving apparatus for receiving wireless communication signal, said apparatus comprising:

an antenna for receiving the wireless communication signal;

a signal-receiving circuit for processing a signal received from
5 the antenna; and

control means for controlling directivity of the antenna,
said antenna including:

a plurality of antenna elements positioned at smaller
distance apart than a half wavelength of a frequency of
10 signal to be received;

a plurality of transmission lines for transmitting
the signal received in any of the antenna elements, at least
any one of the transmission lines having a delay circuit
with a predetermined electric length;

15 synthesizing means for synthesizing the received
signals that have been transmitted through the plurality
of transmission lines; and

switching means, which is positioned in the
transmission line, for switching the antenna elements or
20 the transmission lines, in which the switching means
switches the antenna elements or the transmission lines
to set to two a number of antenna elements to be simultaneously
output among the plurality of antenna elements and to change
a directivity of the antenna to the reverse direction
25 thereof.

5. The signal-receiving apparatus according to Claim 4, wherein
the delay circuit is set so that a sum of phase difference corresponding
to a distance between the two antenna elements outputting simultaneously
30 and phase difference of electric length of the transmission lines

connected to the two antenna elements can become 180 degrees at the frequency.

6. The signal-receiving apparatus according to Claim 4, wherein
5 a distance between the antenna elements and the delay circuit are
adjusted, so that the antenna can have null point in the directivity
thereof in at least one direction.